

**REMARKS/COMMENTS**

Claims 1-27 were pending in the application. Claims 2-7 and 15-27 have been withdrawn from consideration and are cancelled by this response. Claims 1 and 8-14 were rejected. Claims 1, 8 and 14 have been amended herein. Accordingly, Claims 1 and 8-14 are currently pending. Applicants respectfully request reconsideration and allowance of all pending claims.

**Election/Restriction**

The Examiner has acknowledged Applicants' election of Claims 1 and 8-14. However, the Examiner has taken the election without traverse. Applicants note this and by this amendment have cancelled Claims 2-7 and 15-27.

**Objections to the Specification**

The Examiner has objected to the Specification and in particular to the abstract of the disclosure indicating that there are several sentences that are "confusing".

Correction is made by this response to the abstract of the disclosure. The Examiner is invited to call Applicant if any issues remain which might be handled by phone.

The Examiner also objected to page 5 of the disclosure, pointing to the need to change the reference to Fig. 2 and requesting that the patent number of the copending application be provided. Appropriate corrections are made to page 5 of the disclosure by this response.

**Response to Claim Objections**

The Examiner objected to Claim 1, requesting that the acronym "MOEMS" be defined in the claim. Applicants have amended Claim 1 to recite "micro-opto-electro-mechanical systems (MOEMS)". In addition, the Examiner stated that in step e of Claim 1, "systems" should be changed to --system--. Applicants greatly appreciate the Examiner's suggestion to correct the syntax errors in the application and Claims. Applicants have amended Claim 1 as suggested by the Examiner (i.e., changing "systems" to --system--).

The Examiner further objected to Claim 8, suggesting that Applicant add “a” before “fiber” and “a” before “handheld”. Applicants have made these suggested amendments to Claim 8. The Examiner also objected to Claim 8 as failing to provide an antecedent basis for “femtosecond pulsed laser”. Applicants have amended Claim 8 to provide the previously lacking antecedent basis.

The Examiner further points out that “a” should be added to Claim 14 before “handheld”. Applicants have amended Claim 14 as suggested.

#### **Rejections under 35 USC §102(e)**

The Examiner rejected Claims 1 and 10-13 based on 35 USC § 102 (e) being anticipated by Arnone, et al., US Pub. No. 2003/0149346.

Applicants respectfully traverse the Examiner’s rejections for the following reasons. Applicants have studied all of the cited references in detail. All of the cited references fail to teach or suggest a Micro-Opto-Electro-Mechanical Systems (MOEMS) rapid scanning delay line coupled to the light source as recited in the claims. The MOEMS rapid scanning delay line enables time domain imaging. The Examiner contends that Arnone discloses a delay line. However, the delay line disclosed by Arnone is not a MOEMS rapid scanning delay line. That is, Arnone discloses (para. [0161] line 7, et al.):

The pump beam is first directed through a 1 ns delay line 401. This is a **static delay line** and is used to make fine adjustments to the path length.  
The pump beam is then directed into a 150 ps **scanning delay line** 403 having a scanning frequency of 20 Hz. The scanning delay line has a linear-position output so that it is possible to know the position of the delay line when each measurement is taken.

While Arnone does disclose both a static delay line and a scanning delay line, Arnone never teaches or suggests the use of MOEMS technology. The use of MOEMS technology is expressly recited in each of the claims rejected by the Examiner.

The use of MOEMS technology makes the claimed system producible and qualified for handheld manufacturing.

**Rejections under 35 USC §103(a)**

Examiner also rejected claims 8-9 and 11 and 13 under 35 USC 103 (a) as being unpatentable over Arnone et al application 2003/0149346 and Arnone et al application 2004/0155665.

Applicants traverse the Examiner's rejection of Claims 8-9, 11 and 13 for the following reasons. As noted above, Arnone '346 neither teaches nor suggests the use of a MOEMS rapid scanning delay line. Furthermore, neither Arnone '665 nor any of the other cited references teach or suggest the use of a MOEMS rapid scanning delay line in combination with the other elements recited in Claims 8-9, 11 and 13.

Claims 10 is rejected under 35 USC 103 (a) over Arnone 346, Arnone 665, and Keane US 5,040,889. Applicants traverse the Examiner's rejection of Claim 10 for the reasons noted above. In particular, Keane does not teach or suggest the element missing from Arnone '346 and Arnone '665 (i.e., a MOEMS rapid scanning delay line).

Examiner also rejected claim 12 under 35 USC 103 (a) over Arnone 346, Arnone 665, Zelickson US-2005/0143754, and Craig US 5730147. Applicants traverse the Examiner's rejection of Claim 12 for the reasons noted above. In particular, neither Zelickson nor Craig teach or suggest the element missing from Arnone '346 and Arnone '665 (i.e., a MOEMS rapid scanning delay line).

Claim 14 is also rejected by Examiner under 35 USC 103 (a) over Arnone 346, Arnone 665, and Waldern US-2001/0043163. Applicants traverse the Examiner's rejection of Claim 14 for the reasons noted above. In particular, Waldern does not teach or suggest the element missing from Arnone '346 and Arnone '665 (i.e., a MOEMS rapid scanning delay line).

The Examiner also rejected Claim 1 under 35 U.S.C. 103{a} as being unpatentable over Arnone et al. (US 2003/0149346) in view of Mathews et al. (US 2004/0254435). Applicant's traverse the Examiner's rejection of Claim 1 for the reasons noted above and further in light of the failure

of Mathews, et al. to teach or suggest the missing elements recited in Claim 1, namely use of a MOEMS rapid scanning delay line.

In sum, Applicants contend that none of the references cited by the Examiner teach or suggest the use of MOEMS technology. Applicants also contend that none of the cited references teach or suggest the optical delay lines and methods of terahertz imaging recited in the rejected claims. For example, the delay line taught by Arnone et, al 2003/0149346, optical delay line 401, is not dynamic controllable by a MOEMS scanner, as recited in the rejected claims (see Applicant's disclosure of FIG 3 of the subject application). Arnone et, al 346 shows a method of performing terahertz imaging 36, but does not have quasi optical components as recited in the rejected claims (see the quasi optics lens 38 and 44 in FIG. 1 of the present application). Similarly, Arnone et al application 2004/0155665 and the other cited references fail to teach these missing elements.

### **Conclusion**

Applicants did not explain the advantages of MOEMS technology in original specification but listed several explanatory references. However since all non-patent literatures that applicants sent by mail were not in the file when the application was reviewed by Examiner, the overall benefits of our system were not obvious to Examiner. In reality, it is absolutely essential to use microtechnology to manufacture and to package a handheld device for the subject invention.

Applicants believe that in light of the amendments and remarks provided here, all claims are now in condition for allowance. Accordingly, Applicants respectfully request reconsideration of the claims now presented and allowance of each such claim.

Respectfully submitted,



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